Nov. 13, 1923. 1,473,946

A. W. AMSDEN ET AL

COMBINATION HAND VISE

Filed Nov. 7, 1922

Fig. 1

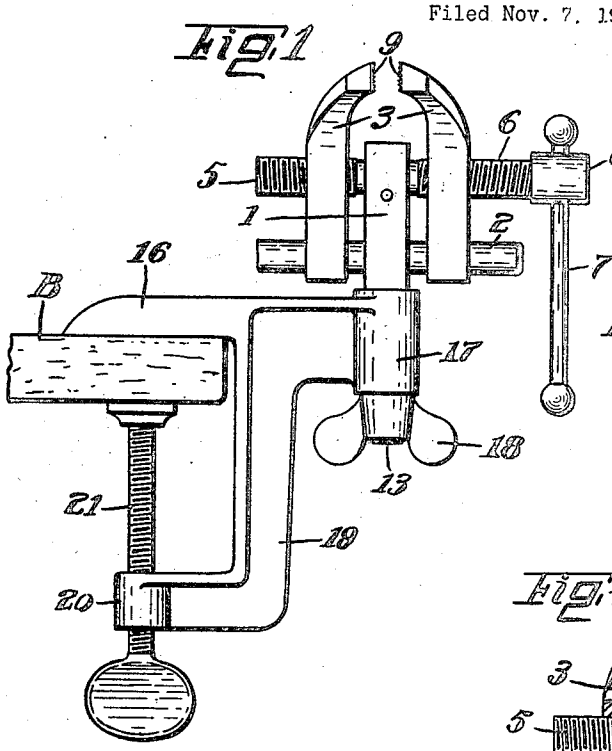


Fig. 2

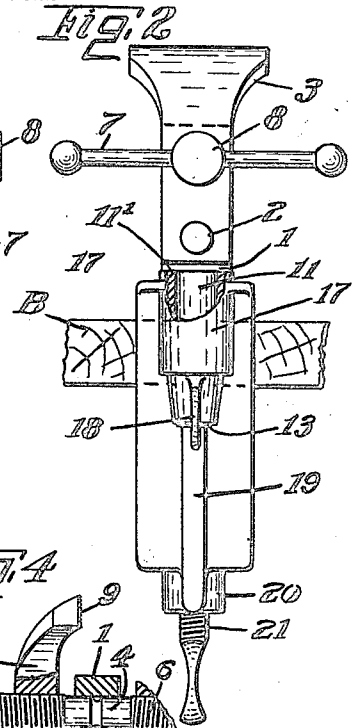


Fig. 3

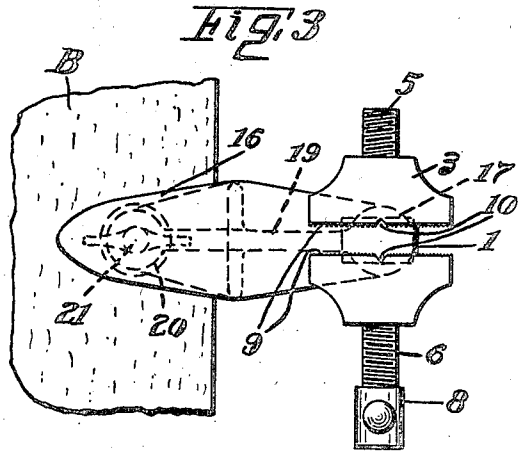
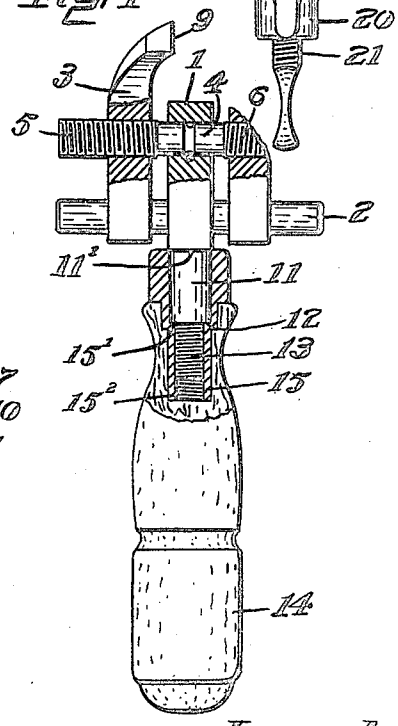


Fig. 4



Inventor
Albert W. Amsden.
William D. Starrett.
By Ellis Spear Jr.
Attorney

Patented Nov. 13, 1923. 1,473,946

UNITED STATES PATENT OFFICE.

ALBERT W. AMSDEN AND WILLIAM D. STARRETT, OF ATHOL, MASSACHUSETTS, ASSIGNORS TO THE L. S. STARRETT COMPANY.

COMBINATION HAND VISE.

Application filed November 7, 1922. Serial No. 599,578.

To all whom it may concern:

Be it known that we, ALBERT W. AMSDEN and WILLIAM D. STARRETT, citizens of the United States, residing at Athol, county of Worcester, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Combination Hand Vises, of which the following is a specification.

This invention relates to vises, and particularly to a combination vise set interchangeably usable either as a hand or a bench vise.

According to our invention such a vise set comprises a vise, and a handle and a bench clamp with which the vise may be quickly and conveniently interchanged so that the machinist may set up the vise either for hand or bench use, with the minimum effort and in the minimum time and thus not only secure in a single tool the advantages of both types of vise, but moreover avoid expensive duplication of equipment.

Aside from novelty of combination, certain of the elements separately are of novel structure and possess certain features of advantage not found in the usual hand or bench vise.

One feature of structural novelty consists in the use of a feed screw having both right and left hand threads, whereby the clamping jaws may be quickly approached and separated in combination with a single guide pin for both of said jaws.

Another feature consists in the use of a sliding ball-end handle for providing an increased leverage in opening and closing the jaws instead of the usual wing nut commonly found on hand vises and which permits only a limited leverage in setting up the clamping jaws.

A further feature consists in the bench clamp itself which not only permits the vise to be set horizontally at any point throughout the circumference of a circle, but affords a convenient anvil at the vise itself.

These, and various other features of utility and advantage which will appear more particularly hereinafter, are secured in the device of the present invention. The construction and operation of our invention, together with a selected embodiment which well illustrates the principles involved, is described and shown in the accompanying drawings and the characteristic features of novelty are particularly pointed out in the appended claims. Throughout the specification and drawings like reference characters are employed to indicate corresponding parts, and in the drawings:

Fig. 1 is a side elevation of a vise and bench clamp attachment in accordance with our invention and illustrating the use of the vise as a bench vise,

Fig. 2 is an end view thereof partly broken away,

Fig. 3 is a plan view thereof, and

Fig. 4 is a fragmentary view of the vise and handle attachment and illustrating the use of the vise as a hand vise.

We have indicated at 1 an upright casting constituting the center post of the vise, and at 2 a horizontal guide pin which is fixed longitudinally in the casting 1 and upon which the oppositely disposed clamping jaws 3 of the vise are guided on either side of said casting.

Set through the casting 1 above the guide pin 2 and parallel therewith is a feed screw which is provided at opposite sides of the casting 1 with left and right hand screw threads 5 and 6, respectively, upon which the clamping jaws 3 are mounted. Upon rotation of the feed screw 4 both clamping jaws simultaneously move toward or from each other, according to the direction in which the feed screw is rotated, being guided throughout their travel by the single guide pin 2.

As here shown, the feed screw is adapted to be rotated by a ball end handle 7 which is set loosely through a bearing fast on one end of the feed screw. This construction permits a greatly increased leverage as compared with the ordinary wing nut commonly used upon hand vises and enables the jaws to be set up as tightly as desired.

The working faces of the clamping jaws are preferably serrated, as indicated at 9 and midway between their ends are provided with opposed V-shaped notches 10 which when the jaws are brought together define a continuous vertical opening within which a pin or the like may be clamped.

Below the jaws, the casting 1 is shouldered, as indicated at 11′, and extends as a reduced cylindrical post 11 which is shouldered, as indicated at 12, and terminates in a reduced threaded portion 13. Where the vise is used as a hand vise, as shown in Fig. 4, we provide a handle 14

which is open at its upper end to receive a metal bushing 15 which is fixed therein by a driving fit. When the post 11 is entered within the handle, the shoulder 11′ abuts the outer face of the bushing 15 and the shoulder 12 rests upon an internal shoulder 15′ formed on the bushing between its ends. Below said shoulder 15′ the bushing 15 is provided with an internal thread series 15² corresponding to the external thread series 13 of the post.

Where the vise is used as a bench vise, we provide the bench clamp shown in Figs. 1, 2 and 3. This clamp consists of a combination bench clamping jaw and anvil 16 having at one end a bearing 17 within which the post 11 of the vise is adapted to be inserted with its shoulder 11′ abutting the upper edge of said bearing and with the thread series 13 extending beneath the lower edge of the bearing for engagement by a wing nut 18, whereby the vise may be tightly clamped to the bench clamp. The bench clamp itself is adapted to be fixed to the bench B by a clamping screw 21 which is adjustable against the under face thereof through an offset bearing 20 formed on an integral web 19 depending from the jaw 16.

The vise may therefore be positioned upon the bench horizontally at any point throughout the circumference of a circle and this adjustment may be varied as desired by simply unloosening the wing nut 18 and rotating the vise in its bearing 17.

Various modifications in the form and construction of our device may obviously be resorted to all without departing from the spirit of our invention if within the limits of the appended claims.

What we therefore claim and desire to secure by Letters Patent is:

1. In a vise, a shouldered cylindrical supporting stem having an unthreaded cylindrical bearing area adapted for swiveled mounting in a bench clamp having a smooth cylindrical bearing receiving said unthreaded portion of the stem, said stem having below said unthreaded portion a threaded portion of less diameter than said unthreaded portion and which is adapted to fixedly receive an interiorly threaded handle or a clamping nut.

2. A vise having a bearing portion adapted for swiveled mounting in a bench clamp having a bearing adapted to receive said bearing portion, said vise below said bearing portion having an engageable portion of less diameter than said bearing portion and said engageable portion being adapted to fixedly receive an interiorly engaging handle.

In testimony whereof we affixed our signatures in presence of two witnesses.

ALBERT W. AMSDEN.
WILLIAM D. STARRETT.

Witnesses:
WILLIAM E. CRAMER,
WALTER L. MAYHEW.